CHAPTER 2

2. Power industry in Peninsular Malaysia.

2.1 Overview

The government-owned electricity utilities dominate power industry in Malaysia. Since the corporatization of National Electricity Board (NEB) in 1990 to the now privatised Tenaga Nasional Berhad (TENAGA), the electricity industry has been growing at the rate of 13% per annum, exceeding the growth of national's GDP.

Tenaga Nasional Berhad had been given the responsible for the generation, transmission and distribution supply of electricity business in Peninsular Malaysia, making it the monopoly in this industry until 1993. In 1993, the government decided to open up the generation business to individual private company known as the 'Independent Power Producer' (IPP). The objectives of introducing the IPPs were to increase the country generation capacity at a faster rate as well as to promote competitiveness and efficiency in generating electricity to cater the sharp increase of the country electricity demand during the early years of the 1990s.

In an effort to further improve the efficiency and competitiveness of power industry, in 1997, TENAGA had taken a major step in restructuring the power generation industry by establishing Grid System Manager to manage the national grid, while the generation business is managed by a separate business entity. With the revamp, the structure will pave way for free market electricity trading and pooling from the generation side, so that TENAGA can purchase electricity from the seller with lowest price.

As for the distribution side, in order to support this structure and improve efficiency in generating power, it has been decided recently by the government to form regional distribution companies from TENAGA existing distribution division that will be responsible in distributing the power according to customer demand.

2.2 Market Size Outlook for Power Business

With steps taken by the government and TENAGA, Malaysia's power capacity has shot up from 1,923MW in 1980 to the current capacity of 12,000MW. This figure includes the newly completed Pergau dam with the installed capacity of 600MW (refer Table 1). By end of this decade, another 2,000MW will be commissioned by TENAGA making the total electricity generation an increase of more than 700% in 20 years. The installed capacity represent 52% reserve margin to the current peak demand of 8,000 MW which way past the ideal level of 20%. With this excessive capacity, the government has announced recently that Malaysia will stop IPPs from building any more large power plants to protect TENAGA's interest. It is therefore, anticipated that the generation business and market share will shrink.

Table 1: Schedule of capacity additions to the year 2000 in MW

Project	Installed Capacity	Expected Commissioning
Kapar Phase III	1,000	1999
Melaka Conversion	118	1998
Chenderoh Hydro	40	2000

Sources: various publications

In comparison to transmission and distribution network capacity, there is still a need for TENAGA to upgrade its ageing transmission network as well as to strengthen the grid network system. For the past three years, there had been an average of 50 transmission and distribution projects had been implemented annually involving construction of average 20 transmission grid

substations and 200 distribution substations. These projects produce the annual total market size of RM 3 to 4 billions. In terms of growth, it can be seen from Table 2 , that for a span of 10 years period from 1990 to 2000, the transmission and distribution network capacity has increased tremendously in particular, the distribution sector (voltage level 33kV and below).

Table 2 : TENAGA Transmission and Distribution Network Capacity, 1990 -2000 (circuit kilometres)

Voltage Level	1990	1995	2000
500 kV	0	0	1,112
275 kV	3,596	4,881	5,493
132 kV	6,107	9,851	11,594
33 kV	2,656	3,647	5,286
22 kV	1,845	2,432	3,162
11 kV	21,264	38,197	68,755

source Tenaga Nasional Berhad

For the past seven years, the operation of the power companies in Malaysia has been expanding in line with the volume of generation, transmission and distribution projects above. Most of the projects are implemented on a contract basis. The contractual framework between TENAGA and its contractors will de discussed in the following section to provide the relationship of the power companies and TENAGA.

The economic crisis which started in mid 1997, has forced TENAGA to defer more than 80 'non-essential' power transmission and distribution projects worth RM3 billion over the next few years, from its planned capital expenditure of RM4 billion annually (see Table 4 below). With this measure taken, it can be seen that for the current 1998 year, TENAGA has not awarded any major transmission and distribution contracts tenders that were floated the previous year. Besides that, there is no major new transmission project tender being floated for the current 1998 year.

Recently in order to sustain its operation, TENAGA has further cut down the current capital expenditure worth RM2.1 billion from a total of RM4 billion. (Refer Table 3). These capital expenditures cut are the contracts that were awarded to contractors last year.

Table 3 : TENAGA Capital Expenditure from 1995 to 2000 (in RM millions)

Year	Total	Percentage by Sector (%)		
		Distribution	Transmission	Generation
1995	3,094	30	21	37
1996	4,710	31	36	21
1997	5,200	30	36	28
1998	4,000	30	40	26
1999	4,000	30	40	26
2000	4,000	30	40	26

source : Tenaga Nasional Berhad

Table 4 : Numbers of TENAGA Project Deferred

State	No. of Project Cancelled/ Deferred	Capacity (MVA)	Estimated Value (RM million)
Perlis	-	-	-
Kedah	14	1200	480
Penang	7	450	160
Perak	12	2520	600
Selangor	17	2520	640
Wilayah Persekutuan	8	1380	200
Negeri Sembilan	10	615	170
Melaka	6	330	90
Johore	11	930	260
Pahang	13	555	150
Terengganu	14	1380	520
Kelantan	10	300	100
Total	**122**	**12,180**	**3,370**

Source: Internal Information from TENAGA

2.3 Players in TENAGA's Transmission and Distribution Projects - The Power Companies

In the 1980s, foreign companies that have the technical knowledge and the financial capabilities undertook most of NEB's projects in transmission and distribution business. At that time, only limited numbers of electrical foreign companies are available for the electrical infrastructure projects world-wide. The fund for these projects came from the government funds and the Asia Development Bank's funds. Most of these foreign company set-up temporary local project representative offices during the implementation of the projects, with only a few companies set-up its own Malaysian incorporated subsidiaries. Local contents of these projects were very minimal with the bulk of the projects' components came from overseas. The only local contents for this type of project was the labour cost for erection.

Since the privatisation of NEB to TENAGA, the profile for TENAGA's project participants had gradually changed mainly because of TENAGA policy in awarding contracts. The source of fund also changed from external generated to TENAGA own internal generated funds. Except for special projects that require high technology capabilities, TENAGA has included the following clauses in its contract documentation with the objective to encourage local participation in the transmission and distribution project.

- eligibility of tenderer:-
    - ⇒ all foreign companies participating in TENAGA tenders are required to have local companies (registered with Pusat Khidmat Kontraktor Kelas 1 or Bumiputera Joint Venture Companies as in Clause 11.1 (I) & (iii) of panduan Am Pendaftaran Kontraktor Kerja Elektrik for Pusat Khidmat Kontraktor for the eligibility of PKK Kelas 1) as partners, and the partnership shall be in the form of joint venture to be eligible in transmission projects tenders.

⇒ as for distribution tenders, tenderers are only invited from the local switchgear manufacturers and/or local H.V electrical contracting firms registered with PKK Class 1 Head VII Subhead 10(a).

- local product requirements:- some components that were used to be imported in the contract are now required to be locally assembled. For example, one of the pre-requisite requirements for TENAGA distribution tenders is that, all the 11kV switchgears shall be source from local switchgear manufacturers, and some of the imported products must be procured locally in Malaysia such as 33/11kV Power Cables, earthing transformers, e.t.c.

With the implementation of this policy, more and more local companies were set-ups together with the foreign counterparts especially during 1994 to 1997.

There are various forms of joint venture arrangements depending on the transmission or distribution business. The form of joint venture arrangement for TENAGA projects is clearly specified in the tender documents. In distribution projects, where the equipment must be locally assembled, joint venture arrangement through licensing agreement is the most common form of partnership between the local manufacturers and foreign companies. In licensing arrangement, the local parties own 100% equity and produce the equipment under its own brand name with the main component imported from their foreign. There are about 16 local distribution switchgear manufacturers with only two manufacturers that have the capability to research, design, develop and manufacture 11kV to 33kV switchgear. The rest of the local switchgear manufacturers only involve in the assembly of the switchgear rather than research and development.

Most of the business revenue from these local switchgear manufacturers are derived from TENAGA distribution market with very minimum from the private distribution market. Only a few of these manufacturers had ventured into

foreign markets such as Vietnam, Bangladesh, Sri Lanka, Indonesia, Philippines and Middle East countries recently.

Because of the complexity and high technology involved in the transmission business, the most common form of co-operation is project based strategic alliances rather than equity joint venture. In this arrangement, the local parties will act as an executing partner with one/various foreign companies grouped together as their strategic partners in supplying high technology equipment and providing engineering services. Strategic alliance can be in the form of: -

- Unincorporated joint venture - this is the most flexible form of co-operation as internal management is concern. In this type of arrangement, the local party will be in charge of the project and its management on a day-to-day basis but his actions are subject to review by an operating committee comprised of representatives from each of the participants. To provide limited liability, a company with limited liability is established as vehicle to the project.
- General partnership which is similar to above arrangement but difference in liability of each partners and taxation from the legal point of view.
- Limited partnership - in this arrangement, at least one party will a general partner who assumes to be liable for the debts and obligations of the partnership without limit, whereas the limited partner is only liable for such debts and obligations up to the amount he contributes to the capital of the partnership.

In summary there are five(5) categories of power company in TENAGA transmission and distribution projects:-

1. local switchgear manufacturers who are mainly involve in distribution projects
2. local contractors who do not manufacture one or more of the main sections of works or item plant of the contract, but rather sub-contracted section of the works to various parties.

3. turnkey contractors that can be in the form of joint venture with foreign company. This type of contractors is responsible to the whole work of the projects that normally require high technology capabilities.
4. local firm in joint partnership with foreign manufacturers or firms.
5. foreign companies with local subsidiary companies. There are 4 major foreign power companies, namely ABB, ALSTOM, SIEMENS and GROUP Schneider.

2.4 Contractual Framework between TENAGA and its Contractors

The underlying contractual framework of a project is important as it allocates risks between the various commercial parties, and so determines the risk profile that will be presented to the project's proposed lenders. Most of the transmission and distribution projects between TENAGA and the contractors mentioned in the earlier section are based on construction type of contracts. TENAGA's standard general conditions of contract are based on the model form of general conditions of contract B3 (first edition 1954, reprinted 1958), recommended by the Institution of Mechanical Engineers, The Institution of Electrical Engineers and the Association of Consulting Engineers.

The contractual arrangements for the construction of project facilities vary depending on the scope of work of project. In this section, we discuss the main characteristic of TENAGA contractual framework that give rise to the project risk.

Brief characteristics of TENAGA contracts are as follows: -

- Structure of the contract - the contract is subdivided into various work subsections, such as supply, delivery, civil work, erection, installation and commissioning, to form the whole scope of work. However, some contracts may consist only a few of the subsection of the work. The tender for a project may comprised of turnkey projects or may be subdivided into a

number of contract packages (or more commonly known as mainheads). Therefore, in one tender, TENAGA may award to a number of contractors according to the packages/mainheads of the tender. A tenderer can bid for the whole tender or only one of the packages.

- Pricing of the contract - the prices quoted in the contract are firm throughout the duration of the contract. Any claim for the Cost Price Adjustment (CPA) will not be entertained by TENAGA. Pricing of the contract is subdivided into material cost (F.O.B and local), transportation (freight and inland), insurance (marine & project) and taxes. Contractors are allowed to price their contract only in Ringgit Malaysia. However, provision is provided for the contractor to specify only the US dollar currency for imported items at an agreed rate, during the contract payment.
- Date of completion: - depends on the structure of the contract, the date of completion varies from 8 months to 24 months from the date of contract award.
- Liquidated damage - 1% each week of the delayed portion to a maximum not exceeding 15% of the delayed portion.
- Contract payment - TENAGA will make payment in the US currency of the contract values that is applicable only to the imported items at the agreed rate during the contract awarding date. All locally assembled/manufactured equipment, insurance, Custom duties and Taxes and Erection Works will be paid in Ringgit. Terms of payment is 90% against the certified completed portion within 30 days of the completion date and the balance within 30 days upon presentation of final certificate of completion. No down payment is given to the contractor.
- Performance bond - the contractors for TENAGA project shall raise Performance Bond with the value equal to 5% of the contract price. This value of performance bond will be reimbursed to contractors after the warranty period of the projects that normally takes about 12 months after the handover of the contract.
- Project deferment or cancellation - TENAGA shall pay for all the works being executed by the contractors prior to the date of frustration.

2.5 Tendering Process by TENAGA

Most of the major transmission and distribution projects are awarded by TENAGA through an open tender process that require approval from the Finance Treasury Department. Only projects that are considered critical and urgent will be awarded on the negotiated tender basis, which still require at least three tenderers participating.

Notice of the tenders will be published in the major national newspapers, and only the qualified tenderers can purchase tender documents. (the tender documents price vary from RM1,000 to RM4,000 depending on the size of the project) Generally the time period given to complete the tender submission depends on the complexity and size of the projects which may vary from 2 to 3 months. Cost of preparing the tender is borne by the bidders.

The tender price shall be valid for at least 6 calendar months and can be extended to another 6 months upon request by TENAGA.

A form of tender deposits amounting to 5% of the tender price is required to ensure that the tenderers are committed in their tender submission. Failure to accept the tender upon contract being awarded will result the tender deposit being forfeited by TENAGA.